JUN/FY06

McALESTER ARMY AMMUNITION PLANT

Oklahoma

Army Defense Environmental Restoration Program Installation Action Plan

Final 6 October, 2006

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Installation Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), McAlester Army Ammunition Plant, executing agencies, and regulatory agencies an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this Installation Action Plan at the Installation Action Plan Workshop held April 19- 20, 2006:

Company/Installation/Branch
Engineering and Environment, Inc for USAEC
McAlester Army Ammunition Plant
Oklahoma Department of Environmental Quality
Shaw Engineering & Infrastructure, Inc.
US Army Corps of Engineers, Tulsa District
US Army Environmental Center
US Army Joint Munitions Command
Weston Solutions, Inc.

Acronyms & Abbreviations

~	approximately
AEDB-R	Army Environmental Database - Restoration
APCS	Air Pollution Control System
ARAR	Applicable, Relevant and Appropriate Requirements
BRAC	Base Realignment and Closure
BT	Group 71-BT; identifier of a storage area
CC	Compliance Cleanup
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMI	Corrective Measure Implementation
CMI(C)	Corrective Measure Implementation - Construction
CMI(O)	Corrective Measure Implementation - Operations
CMIP	Corrective Measure Implementation Plan
CMS	Corrective Measures Study
CTC	Cost-to-Complete
CTT	Closed, Transferred, or Transferring
DAC	Defense Ammunition Center
DCE	Dichloroethylene
DES	Corrective Measures Implementation (Work Plan)
DERP	Defense Environmental Restoration Program
DRMO	Defense Reutilization and Marketing Office
DSERTS	Defense Site Environmental Restoration Tracking System (now called AEDB-R)
EEI	Engineering & Environment, Inc.
EM	Environmental Management
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army
ERIS	Environmental Restoration Information System
FS	Feasibility Study
ft	foot
FY	Fiscal Year
IAP	Installation Action Plan
ICM	Interim Corrective Measure
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	thousand
LC	identifies a storage area on the facility
LTM	Long-Term Management
MCAAP	McAlester Army Ammunition Plant
MCL	Maximum Contaminate Level
MEC/MC	Munitions and Explosives of Concern/Munitions Constituents
mg/kg	milligrams/kilograms
mm	millimeters
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MR	Munitions Response

MSSL	Medium-Specific Screening Levels
MW	Monitoring Well
NE	Not Evaluated
NFA	No Further Action
NPDES	National Pollution Discharge Elimination System
OCC	Oklahoma Corporation Commission
OD	Ordnance
ODEQ	Oklahoma Department of Environmental Quality
OK	Oklahoma
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls
PCP	Pentachlorophenol
POL	Petroleum, Oil, and Lubricants
ppb	Parts Per Billion
ppm	Parts Per Million
PST	Powder Settling Tank
RA	Remedial Action
RAB	Restoration Advisory Board
RA(C)	Remedial Action - Construction
RA(O)	Remedial Action - Operation
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy In Place
RR	Railroad
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TNT	Trinitrotoluene
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TW	Temporary Well
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance

VOC	Volatile Organic Compound
WBZ	Water Bearing Zone
ZUNI	type of rocket/missile

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) Acronym Conversions

CERCLA		RCRA
Preliminary Assessment (PA)	=	RCRA Facility Assessment (RFA)
Site Inspection (SI)	=	Confirmation Sampling (CS)
Remedial Investigation/ Measures Feasibility Study (RI/FS)	=	RCRA Facility Investigation/Corrective Study (RFI/CMS)
Remedial Design (RD)	=	Design (DES)
Remedial Action (Construction) (Construction) (RA(C))	=	Corrective Measures Implementation (CMI(C))
Remedial Action (Operation) (Operation) (RA(O))	=	Corrective Measures Implementation (CMI(O))
Long-Term Management (LTM)	=	Long-Term Management (LTM)
Interim Remedial Action (IRA)	=	Interim Measure (IM)

Installation Information

Installation Locale: McAlester Army Ammunition Plant (MCAAP) is located in a sparsely populated area of southeast Oklahoma, 9 miles southwest of the City of McAlester (population 16,370), Pittsburg County (population 40,581). The closest major cities are more than a hundred miles away (Tulsa, 113 miles north; Oklahoma City, 120 miles northwest; Dallas, 180 miles southwest). The area has been used for strip mining coal, but is currently used for agricultural purposes. MCAAP occupies 44,965 acres (70 square miles) and is the major employer in the area.

Installation Mission: The current mission of MCAAP is to produce and renovate conventional ammunition and ammunition-related components as a Specified Mission Facility. MCAAP receives, stores, ships, and/or demilitarizes and disposes of conventional ammunition and related items. Additionally, MCAAP is the group General Technology Center for bomb loading, assembling, packing, manufacturing, engineering, product assurance and production support. MCAAP is an active facility, which is Government-owned and Government-operated.

MCAAP is also the home for the United States Army Defense Ammunition Center (DAC), which was relocated from the Savanna Army Depot Activity, Savanna, Illinois in 1998.

Lead Organization: Army Materiel Command (AMC)

Lead Executing Agency:
US Army Corps of Engineers, Tulsa District

Regulatory Participation:
Federal: US Environmental Protection Agency, Region VI (EPA)
State: Oklahoma Department of Environmental Quality (ODEQ)

National Priorities List (NPL) Status:
None of MCAAP sites are on the National Priorities List.

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status: **RAB/TRC/TAPP STATUS:**
MCAAP does not have a Restoration Advisory Board (RAB) or a Technical Review Committee (TRC).

Installation Program Summaries

IRP

Primary Contaminants of Concern: TPH, Metals, PCBs, Dioxins, POLs, TCE
Affected Media of Concern: Soil, Groundwater, Surface Water, Sediment
Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 2009
Funding to Date: (thru FY05): $14,778,000
Current year funding (FY06): $549,000
Cost to Complete (CTC): $5,509,000

MMRP

Primary Contaminants of Concern: UXO
Affected Media of Concern: Soil
Estimated date for RIP/RC: 2014
Funding to Date: (up to FY05) $326,000
Current year funding (FY06): $6,000
Cost to Complete (CTC): $10,384,000

Cleanup Program Summary

Installation Historic Activity: McAlester Naval Ammunition Depot began with a War Department announcement on June 10, 1942, that a $35 million plant would be built to provide additional production facilities during World War II. Work began on the construction of the McAlester Naval Ammunition Depot at McAlester, Oklahoma, in August 1942. Construction of the depot was a concerted effort, and at the height of activity, 15,000 workers were employed. Construction proceeded rapidly, and on September 24, 1943, the first munitions were produced. During World War II, the facility produced 325,000 tons of various types of munitions including 16-inch gun ammunition, mines, rockets, and depth charges.

On October 1, 1977, the Deputy Secretary of Defense transferred operation from the Department of Navy to the Department of Army, under the provisions of the Department of Defense Directive 5160.65 and established the MCAAP as the single manager for the manufacture of conventional ammunition. MCAAP was assigned to the United States Army Armament Materiel Readiness Command. The primary mission of MCAAP did not change after transfer of operations to the Army.

EPA Region 6, in conjunction with ODEQ, issued a RCRA part B permit in September 1992. The permit, that was modified December 15, 1998, requires the corrective action program at MCAAP. EPA Region 6 was the lead regulatory agency for RCRA remediation until ODEQ obtained corrective action authority in December 1994.

Current Activity: MCAAP is performing corrective actions as required by their Resource Conservation and Recovery Act (RCRA) Part B Permit issued by EPA (1992), and modified December 15, 1998, and is currently under the primacy of the ODEQ (1994).

IRP

Prior Year Progress:

- Five year reviews were completed in FY06 for sites MCAAP-002, MCAAP-032, MCAAP-033 and MCAAP-043
- Completed RFI report for MCAAP-048 and RI field activities at MCAAP-046.

Future Plan of Action:

- Complete RI field activities for MCAAP-046 (including pilot study)
- Monitored Natural Attenuation (MNA) is proposed as a remediation strategy at MCAAP-046 and 048.

MMRP

Prior Year Progress:

- Completed PA in 2004 and finalized SI 2006.

Future Plan of Action:

- RI will be completed.
- MEC/MC removal and ex situ soil treatment is anticipated at all five of the MMRP sites.

MCALESTER AAP

Installation Restoration Program

Total AEDB-R IRP Sites / AEDB-R sites with Response Complete: 48/46

Different Site Types:

1 Contaminated Sediment	3 Contaminated Buildings	3 Storage Area
2 Surface Disposal Areas	1 Drainage Ditch	1 Disposal Pit/Dry Well
1 Industrial Discharge	10 Landfills	1 Oil Water Separator
2 Spill Site Areas	3 Waste Treatment Plants	2 Burn Areas
1 Miscellaneous Tanks	14 Surface Impoundments/Lagoons	
3 Explosive Ordnance Disposal Areas		

Most Widespread Contaminants of Concern: TPH, Metals, PCBs, Dioxins, POLs, TCE

Media of Concern: Soil, Groundwater, Surface Water, Sediments

Completed Removal (REM)/Interim Remedial Action (IRA)/Remedial Action (RA):
MCAAP-018, 026, 032, 033, 037, 043, 045, 046, 047, 048

Total IRP Funding

Prior years (thru FY05):	$14,778,000
Current year funding (FY06):	$ 549,000
Future Requirements (FY07+):	$ 5,509,000
Total:	$20,836,000

Duration of IRP

Year of IRP Inception:	1991
Year of IRP RIP/RC:	2009

Year of IRP Completion including Long-Term Management (LTM): Indefinite

IRP Contamination Assessment

IRP Contamination Assessment Overview

In 1987, the EPA Region 6 performed a RCRA Facility Assessment (RFA) and identified eight Solid Waste Management Units (SWMUs). In 1992, the United States Army Environmental Hygiene Agency (USAEHA) performed an additional assessment and identified 42 potential SWMUs at MCAAP. Consultations among the parties on March 10-11, 1992, determined that the USAEHA report would be used as the baseline. All 42 of these sites were designated as Defense Environmental Restoration Program (DERP) eligible sites, and were entered into the Defense Site Environmental Tracking System (DSERTS). ODEQ and EPA Region 6 accepted the recommendation of no further action (NFA) for 33 of the sites, leaving nine of these sites requiring further investigation.
On January 25, 1993, MCAAP issued a memorandum to EPA Region 6 providing notification of a newly identified SWMU, the Minol Building (MCAAP-043) and required further investigation for PCBs, bringing the total to ten sites requiring further investigation. Brown Lake was identified to be sampled in the USAEHA report and, subsequently, became a DSERTS site (MCAAP-044).

MCAAP requested, and USAEC conducted, the RCRA Facility Investigation (RFI) for the nine SWMUs identified in the permit, plus the newly identified SWMU (MCAAP-043). The RFI was submitted in December 1994 and recommended NFA at five of the ten sites. ODEQ accepted NFA for SWMUs 1, 2, 5, 12 and 19 on December 15, 1998, by permit modification.

The remaining 5 sites required additional work. A removal action was performed at the Minol Building in 1994 - 1995. EPA accepted the cleanup of the Minol Building (MCAAP-043) by letter on October 4, 2000. Corrective measures studies were performed at the remaining 4 sites. Two sites, the Deactivation Furnace/Lagoon (MCAAP-018) and the Burn Area 2 (MCAAP-026) were remediated for lead contamination in 1998 and 2000, respectively. These remedies were also accepted on December 15, 1998, by permit modification. The remaining sites, Building 209 Pallet Dipping Operation (MCAAP-032) and Pallet Dip Operation (MCAAP-033), based on risk assessments, were determined to meet ODEQ remediation goals, thereby qualifying for NFA. Final acceptance is being requested through the application for permit renewal, submitted in February 2002.
MCAAP investigated another site, the Roundhouse Complex, to determine if it required designation as a SWMU. The site did not meet the requirements to be designated as a SWMU, but was included in DSERTS (MCAAP-045) and has been remediated.
Over time, several historical sites have come to the attention of MCAAP. In 1999, two possible sites were identified and investigated by the U. S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), the Former Scrap Metal Baler Area and the Mortar Range Impact Area. The Former Scrap Metal Baler Area has been included in AEDB-R (MCAAP-046). The Mortar Range Impact Area is being addressed under the MMRP. In 2001, two new ER,A eligible AEDB-R sites, the PCB Contamination Detention Area (MCAAP-047) and Miscellaneous Tanks (MCAAP-048), were identified. MCAAP now has a total of 48 sites in AEDB-R, not including the MMRP sites. Currently six sites are receiving ER,A funding. These are MCAAP-002, 032, 033, 043, 046, and 048.

Two of the sites, MCAAP-046 and 048 are currently under investigation. At these sites, the main contaminants of concern are metals, POLs, dioxins, PCBs, SVOCs, and solvents in soil and TCE in the ground water.

IRP Cleanup Exit Strategy

MNA has been proposed as a remediation strategy at MCAAP-048 and an enhanced MNA strategy is being proposed for MCAAP-046. MCAAP plans to demonstrate that the sites are natural attenuating and will not pose a threat to Brown Lake, the local drinking water source. Five-year reviews will continue at sites where contamination was left in place to ensure remedial actions are still protective of human health and the environment.

Previous Studies

1979

- Installation Environmental Impact Assessment, US Army Armament Materiel Readiness Command, Mar
- McAlester Army Ammunition Plant Water Quality Management Study, US Army Corps of Engineers & Horacek, Smith, Painter and Spitz, Inc., Nov

1987

- Environmental Studies and Disposal Recommendations (Final), Enviromed Laboratories, Inc., Apr
- RCRA Facility Assessment Report, McAlester Army Ammunition Plant , Environmental Protection Agency, Aug

1988

- Update of the Initial Installation Assessment of McAlester Army Ammunition Plant, OK, US Army Toxic and Hazardous Materials Agency, Aberdeen, MD, Environmental Science and Engineering, Inc, Jun

1990

- Groundwater Assessment, US Army Corps of Engineers, Jan
- Groundwater Quality Consultation No. 38-26-0374-91, US Army Environmental Hygiene Agency, Dec

1992

- Wastewater Management Study No. 32-24-H094-92, Preliminary Toxicity Testing and Evaluation, US Army Environmental Hygiene Agency, Feb
- Groundwater Quality Consultation No. 38-26-K135-92, Evaluation of Solid Waste Management Units, US Army Environmental Hygiene Agency, Mar

1993

- Final Project Work Plan - RCRA Facility Investigation for MCAAP Sites, Metcalf & Eddy, Inc., Jun

1994

- RCRA Facility Investigation (RFI) Report for Various Solid Waste Management Units, Metcalf & Eddy, Inc., Jan
- Submittal of Summary Report, Removal and Disposal of the PCB Contaminated Soil, South of Building 177, US Army Corps of Engineers & Dow Environmental, Apr
- Draft Work Plan - Minol Building, US Army Corps of Engineers & AWD Technologies, Inc., Sep
- RCRA Facility Investigation and Risk Assessment Report - Supplemental Phase II - SWMU 32 and 33, Metcalf & Eddy, Inc., Nov
- Final Work Plan, Removal and Disposal of PCB Contaminated Material and Soil - Minol Building, US Army Corps of Engineers & AWD Technologies, Inc., Dec
- RCRA Facility Investigation and Risk Assessment (Final), US Army Environmental Center, Aberdeen, MD, Metcalf and Eddy, Inc., Dec

1995

- Final Corrective Measure Study Work Plan - Deactivation Furnance and Lagoon - SWMU 18 and 34, US Army Corps of Engineers & R.F. Weston, Jan
- Final Work Plan – Roundhouse, US Army Corps of Engineers & Woodward-Clyde, Apr
- Final Summary Report, Removal and Disposal of PCB Contaminated Material and Soil, Minol Building, US Army Corps of Engineers & Dow Environmental (formerly AWD), Jul
- Draft Summary Report - Soil Sampling South of Bldg 177 (Minol Building), US Army Corps of Engineers & Dow Environmental (formerly AWD), Sep
- Summary Report, Soil Sampling South of Building 177 (Draft, accepted as Final), US Army Corps of Engineers & Dow Environmental (formerly AWD), Sep
- Administrative Record for Corrective Measure Study - Deactivation Furnace and Lagoon - SWMU 18 and 34, US Army Corps of Engineers & R.F. Weston
- Administrative Record for Corrective Measure Study - Burn Area 2 - SWMU 26 , US Army Corps of Engineers & R.F. Weston
- Administrative Record for Corrective Measure Study - Deactivation Furnace and Lagoon - SWMU 18 and 34, US Army Corps of Engineers & R.F. Weston
- Administrative Record for Corrective Measure Study - Burn Area 2 - SWMU 26, US Army Corps of Engineers & R.F. Weston

1996

- Final Corrective Measure Study Work Plan - Burn Area 2 SWMU 26, US Army Corps of Engineers & R.F. Weston, Jan
- Final Work Plan, Removal and Disposal of PCB Contaminated Material and Soil, Minol Building, US Army Corps of Engineers & Dow Environmental (formerly AWD), Feb
- Field Data Verification Report - Burn Area 2 - SWMU 26, US Army Corps of Engineers & R.F. Weston, Mar
- Draft Summary Report - Removal and Disposal of PCB Contaminated Soil South of Bldg 177 (Minol Building), US Army Corps of Engineers & Dow Environmental (formerly AWD), Apr
- Final Field Technical Report - Site Investigation of Roundhouse Area, US Army Corps of Engineers & Woodward-Clyde, Oct

1997

- Final Corrective Measure Study Report - Deactivation Furnace and Lagoon - SWMU 18 and 34, US Army Corps of Engineers & R.F. Weston, Jun
- Final Corrective Measure Study Report - Burn Area 2 - SWMU 26, US Army Corps of Engineers & R.F. Weston, Jun

1998

- Corrective Measures Implementation Plan for SWMU #18, Soil Remediation and Lagoon Closure, US Army Corps of Engineers & R.F. Weston, Mar
- Field Data Verification Report - Deactivation Furnace and Lagoon - SWMU 18 and 34, US Army Corps of Engineers & R.F. Weston , Mar

1998 (con't)

- Final Corrective Measure Implementation Plan for SWMU 18 Soil Remediation and Lagoon Closure, US Army Corps of Engineers & R.F. Weston, Mar
- Final Project Work Plan - Deactivation Furnace and Lagoon - SWMU 18 and 34, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Oct
- Project Work Plan, SWMU #18 Soil Remediation and Lagoon Closure, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Oct

1999

- Final Corrective Measure Implementation Plan - Burn Area 2 - SWMU 26, US Army Corps of Engineers & R.F. Weston, Jan
- Corrective Measure Completion Report - Minol Building US Army Corps of Engineers & Radian International, Mar
- Final Sampling and Analysis Plan for Corrective Measure Treatability Study - Burn Area 2 - SWMU 26, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Jun
- Final Corrective Measure Study Work Plan - Former Pallet Dipping Area - Bldg 209 - SWMU 32, US Army Corps of Engineers & R.F. Weston, Jun
- Final Corrective Measure Study Work Plan - Former Pallet Dipping Area - Bldg 471 - SWMU 33, US Army Corps of Engineers & R.F. Weston, Jun
- Final Corrective Action Closure Report, SWMU #18 Soil Remediation and Lagoon Closure, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Jul
- Final Corrective Measures Completion Report, Minol Building and Drainage Ditch South of Building 177, US Army Corps of Engineers & Radian International (formerly Dow Environmental), Jul
- Report for Removal and Disposal of Total Petroleum Hydrocarbons Contaminated Materials and Soil, Roundhouse Area, US Army Corps of Engineers & Woodward-Clyde, Sep
- Final Project Work Plan - Soil Remediation for Burn Area 2, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Oct
- Hazardous and Medical Waste Study No. 37-EF-4333-00 Relative Risk Site Evaluation, Dec

2000

- Final Corrective Measure Completion Report for SWMU 18 Soil Remediation and Lagoon Closure, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Feb
- Site Validation Report - Former Pallet Dipping Area - Bldg 209 - SWMU 32, US Army Corps of Engineers & R.F. Weston, Apr
- Site Validation Report - Former Pallet Dipping Area - Bldg 471 - SWMU 33, US Army Corps of Engineers & R.F. Weston, Apr
- Final Corrective Action Closure Report, SWMU #26 Burn Area 2 Soil Remediation, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, May
- Final Corrective Action Closure Report - Burn Area 2 - SWMU 26, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Jun

2000 (con't)

- Final Corrective Measure Study Report - Former Pallet Dipping Area - Bldg 209 - SWMU 32, US Army Corps of Engineers & R.F. Weston, Nov
- Final Corrective Measure Study Report - Former Pallet Dipping Area - Bldg 471 - SWMU 33, US Army Corps of Engineers & R.F. Weston, Nov

2001

- Hazardous and Medical Waste Study No. 37-EF-4333-01, Relative Risk Site Evaluation, Jan
- UST/PST Ground Penetrating Radar Report - Powder Settling Tank and Underground Storage Tanks - MCAAP 46 and MCAAP 48, US Army Corps of Engineers & GeoModel, Feb
- Project Execution Plan Scrap Metal Baler and PCB Contamination , US Army Corps of Engineers & IT Corporation/Shaw Environmental, Jul
- Final Corrective Measure Study Work Plan Scrap Metal Baler Area and Remedial Action Work Plan, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Nov
- Final Corrective Measure Completion Report - Burn Area 2 Soil Remediation (SWMU 26), US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Dec
- Work Plan and Site Safety Health Plan for Removal of Underground Storage Tanks and Powder Storage Tanks, US Army Corps of Engineers & World Environmental
- Work Plan and Site Safety Health Plan for Removal of Underground Storage Tanks and Powder Storage Tanks, US Army Corps of Engineers & World Environmental

2002

- Magnetic Investigations - Powder Settling Tank and Underground Storage Tanks - MCAAP 46 and MCAAP 48, US Army Corps of Engineers & Environmental Geophysics Associates, Jan
- Final Work Plan - Corrective Measure Study for Powder Settling Tanks and Underground Storage Tanks, US Army Corps of Engineers & R.F. Weston, March-02.Interim Investigation Reports (Powder Settling Tanks and Underground Storage Tanks - MCAAP 48), US Army Corps of Engineers & R.F. Weston, Jul
- Draft Final Addendum for Corrective Measure Study Work Plan - Powder Settling Tanks and Underground Storage Tanks - MCAAP 48, US Army Corps of Engineers & R.F. Weston, Nov
- Final Addendum to Work Plan Removal of Underground Storage Tanks and Powder Settling Tanks - MCAAP 48, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Dec
- Final Work Plan - Corrective Measure Study - Powder Settling Tanks and Underground Storage Tanks - MCAAP 48, US Army Corps of Engineers & R.F. Weston, Dec

Previous Studies

2003

- Final Addendum 1 to Corrective Measure Study Work Plan Scrap Metal Baler Area and Remedial Action Work Plan, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Jan
- Work Plan Addendum 2 for Corrective Measure Study Work Plan - Powder Settling Tanks and Underground Storage Tanks - MCAAP 48, US Army Corps of Engineers & R.F. Weston, Jan
- Final Addendum 2 to CMS Work Plan Scrap Metal Baler Area and Remedial Action Work Plan, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Jul
- Final Addendum 3 to Corrective Measure Study Work Plan Scrap Metal Baler Area and Remedial Action Work Plan, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Sep
- Field Activities Report - Investigation and Plume Delineation of Upper Groundwater Bearing Zone @ PST 103, 109A, 161, and 163., US Army Corps of Engineers & R.F. Weston, Nov
- Draft Final Powder Settling Tank Removal Report, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Dec

2004

- Draft Final Field Activities Report - Investigation and Plume Delineation of Upper Groundwater Bearing Zone at Former Scrap Metal Baler Site, US Army Corps of Engineers, Mar
- Draft RCRA Facility Investigation - SWMU 48 Powder Settling Tanks, US Army Corps of Engineers & R.F. Weston, Jun
- Draft Corrective Measure Study for SWMU 48 - PST 103, 109A, 161 and 163, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Jul
- Final PCB Contamination Detention Area Remedial Action Completion Report, US Army Corps of Engineers & IT Corporation/Shaw Environmental, Jul
- Work Plan Addendum 3 for Corrective Measure Study Work Plan - Powder Settling Tanks and Underground Storage Tanks - MCAAP 48, US Army Corps of Engineers & R.F. Weston, Jul
- Draft RCRA Facility Investigation - Underground Storage Tanks - MCAAP 48, US Army Corps of Engineers & R.F. Weston, Jul

2005

- Final Soil RCRA Facility Investigation Report, Former Scrap Metal Baler Area (DSERTS No. 46), US Army Corps of Engineers & Shaw Environmental, May
- Final Addendum 5 to Corrective Measure Study Work Plan Scrap Metal Baler Area and Remedial Action Work Plan PCB Contamination Detention Area, US Army Corps of Engineers & Shaw Environmental, Inc, Jan
- Draft Groundwater RCRA Facility Investigation Report Former Scrap Metal Baler Area, DSERTS No. 46, May
- Final Groundwater RCRA Facility Investigation Report Former Scrap Metal Baler Area, DSERTS No. 46, Dec

2005 (con't)

- Photo Log - SWMU 18, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, May
- Photo Log - SWMU 18, US Army Corps of Engineers & IT Corporation/OHM Remediation Services, Jul
- Final Soil RFI Report for MCAAP-046, Shaw Environmental, May
- Final Groundwater RFI report for MCAAP-046, Shaw Environmental, Dec
- Corrected Final Addendum 5 To CMS Work Plan, Former Scrap Metal Baler Area, Shaw Environmental, Jan
- Final Addendum 6 To CMS Work Plan, Former Scrap Metal Baler Area, Shaw Environmental, Dec
- Final RFI Report MCAAP-048, PST, Feb
- Final RFI Report MCAAP-048, UST, Feb
- Final RFI Addendum Report MCAAP-048, PST, Feb

2006

- Corrected Final Addendum 6 To CMS Work Plan, Former Scrap Metal Baler Area, Shaw Environmental, Jan

MCALESTER AAP

Installation Restoration Program
Site Descriptions

MCAAP-046
FORMER SCRAP METAL BALER AREA

SITE DESCRIPTION

The Baler site is located in the Defense Reutilization and Marketing Office (DRMO) yard. At this site, a Resource Recovery Recycling program baler was used to compact metal cans and other metal objects. The cans crushed here are suspected of having contained paints, oils, solvents, and other liquids in varying amounts. Over the years of operation, 1950s to 1980s, especially in the 1950s and 1960s, it is believed that some of the waste materials leached into the soil. During rainy periods, an oily layer has been noted floating on puddles in the vicinity of the baler. The baler and the underlying sump have been removed. The site presently consists of a gravel-covered area, ~3 acres in size, with an active rail line running through it.

Sampling by USACHPPM occurred in December 1999. PCBs, metals, and SVOCs above EPA Region 6 residential medium-specific screening levels (MSSLs) were detected in soil.

STATUS

REGULATORY DRIVER: RCRA

RRSE: Medium

CONTAMINANTS OF CONCERN:
POL, PCBs, Dioxins, Solvents, Metals, TCE

MEDIA OF CONCERN:
Soil, Groundwater, Surface Water, Sediments

Phases	Start	End
RFA	199912	200009
RFI/CMS	200106	200710
DES	200710	200802
IRA	200305	200503
CMI(C)	200802	200810
CMI(O)	200810	202609

RIP: 200810
RC: 202610

The RFI (started in 2002) found petroleum hydrocarbons in the soils and chlorinated organics (above the MCL) in the groundwater. Removal of petroleum hydrocarbon contaminated soils was completed in 2004. During the removal, multiple 105mm rounds were encountered. In 2003, a plume delineation study was performed. Chlorinated organics were only identified in the upper water-bearing zone (WBZ). Sentry wells installed in 2004 indicated the plume had not been fully delineated to the south and southeast. New wells were installed between the sentry wells and Brown Lake. Analytical results from these wells indicate that the plume has not been delineated. Hydrogeologic characterization of the upper WBZ has indicated permeability may be near 10^{-3} cm/sec.

Sampling for determination of acceptability of MNA was initiated in June 2005.

CLEANUP STRATEGY

Perform human health and screening level ecological risk assessments to determine impacts of TCE at the marsh interface and any residual arsenic concerns in soil. Perform quarterly sampling for VOCs and geochemical properties. Provide signage around contaminated site and incorporate all existing data into ERIS.

The anticipated remedial action for groundwater is enhanced MNA. Although a pilot study will be conducted in FY07, it is assumed injection would occur over a six-month period. MNA sampling will be conducted annually in the out years. VOC sampling will be semi-annual after 8 quarters and annual after 10 years. Thirty wells will be sampled for one additional year (FY06-FY07) and twenty wells thereafter. MNA sampling began during the RFI phase to evaluate its applicability and effectiveness and will continue formally under RA(O) in the out years. Additionally, 8 monitoring wells on the down gradient limits of the plume (toward Brown Lake) will be monitored quarterly for VOCs during the 3rd through 7th years to insure that contamination is not migrating into Brown Lake above MCLs. The exit strategy is that within 10 years the data will be compiled and re-evaluated. A recommendation will be submitted to ODEQ to reduce or eliminate sampling.

Well abandonment will occur as wells are no longer needed to support the monitoring (funding programmed in the out years).

MCAAP-048
MISCELLANEOUS TANKS

SITE DESCRIPTION

This SWMU originally consisted of 19 suspected underground storage tank (UST) locations and 10 powder settling tank (PST) locations. The suspected UST locations were identified from files obtained during development of the Environmental Baseline Study for Privatization of Utilities in FY00 and subsequent retiree interviews. Documents suggested USTs had been filled with sand and fuel was left in place. USACHPPM evaluated the sites and determined that at least one UST was still in place. Through a combined magnetometer survey and test pit excavation of the 19 sites, 4 sites (50PC 101, 105B, 136B and near Roads CD&7) were found to contain a total of 11 USTs. Contaminants of concern included petroleum hydrocarbons. During the interim removal action (IRA) for the USTs, the 11 USTs were removed during the summer 2002. Petroleum hydrocarbons and low levels of TCE were detected in some USTs, but no TCE was found in soil. Where soils contaminated with petroleum hydrocarbons were found, the soils were removed until confirmation samples verified levels were below Oklahoma Corporation Commission (OCC) requirements. Closure forms were submitted to OCC in November 2002 and accepted without comment. At the request of ODEQ, the groundwater at four UST sites was investigated for possible release from the tanks in 2003. Selenium and phthalates were identified above MCLs, but were not attributed to the USTs, and total petroleum hydrocarbon concentrations were less than OCC action levels.

STATUS

REGULATORY DRIVER: RCRA

RRSE: Medium

CONTAMINANTS OF CONCERN:
POL, Metals, PCBs, TCE

MEDIA OF CONCERN:
Soil, Groundwater, Surface Water, Sediments

PHASES	Start	End
RFA	200010	200103
RFI/CMS	200106	200612
IRA	200106	200503
CMI(C)	200701	200710
CMI(O)	200710	202609
LTM	202610	202709

RIP: 200710
RC: 202609

USACHPPM identified the PST sites in 2000. Water used to clean the walls and floors of the production facilities settled in the PSTs and discharged through an overflow pipe. During the removal in 2003 it was determined that 3 sites (133, 161,163) emptied into the sanitary sewer and 7 sites (103, 109, 109a, 110, 111, 126, 130) discharged into drainage pathways. In 2002, the RFI investigation found concentrations of chlorinated organics (TCE, etc.) above the MCL in the groundwater at four sites (103, 109A, 161,163). Several metals were identified above the EPA drinking water screening levels. In 2003, the horizontal extents of four chlorinated organics plumes were delineated including the largest plume (161) located adjacent to the backwaters of Brown Lake, a sensitive water supply. Chlorinated organics were not detected in the second WBZ. The PSTs were removed along with tank pit soil that contained chemical concentrations exceeding 10 times the EPA MSSLs ($10x^{-5}$) risk.

In 2004, additional TCE contaminated material (soil) at PST Site 103 was removed. The hydrogeologic formation characteristics of the upper WBZ at PST sites (103, 109A, 161, 163) were evaluated and a background soil evaluation for metals was performed. The Final UST RFI and Final PST RFI reports were submitted in March 2005.

Sampling for determination of acceptability of MNA was initiated in June 2005.

CLEANUP STRATEGY

Complete a CMS for the groundwater contamination. Perform quarterly sampling for VOCs and geochemical parameters. Prepare an annual report presenting an evaluation of the data from latest sampling rounds. Provide signage at contaminated sites and incorporate all existing data into ERIS.

PSTs 103/109a - Perform quarterly monitoring and evaluation of VOCs and geochemical parameters for one additional year. Re-evaluate and report data collected, including, if appropriate, a petition to ODEQ for an alternate monitoring period. Reduce MNA sampling frequency to semi-annual after 8 quarters. After 2 years, the data will be compiled and re-evaluated. Modeling may be performed to demonstrate that affected groundwater will not reach a receptor.

Exit Strategy: Within 5 years, a recommendation will be submitted to ODEQ to discontinue sampling.

PSTs 161/163 - Perform quarterly monitoring and evaluation of VOCs and geochemical parameters for one additional year. Two additional wells may be installed within the plume at PST 161. Reduce MNA sampling frequency to semi-annual after 8 quarters. Re-evaluate and report data collected, including, if appropriate, a petition to ODEQ for an alternate monitoring period. A Risk Assessment may be performed.

Exit Strategy: Within 10 years, a recommendation will be submitted to ODEQ to accept NFA at SWMU No. 48.

Well abandonment will occur as wells are no longer needed to support the monitoring.

MCALESTER AAP

Installation Restoration Program
RC Sites with LTM

MCAAP-002
LANDFILL, SOUTHWEST OF BROWN LAKE

SITE DESCRIPTION

This site is located 1,000 feet south of the western end of Brown Lake in the central section of the installation. The site was a general refuse landfill approximately 50 acres in size, and operated from 1967 until August 1990. Monitoring wells were installed at the site and sampling results from those wells indicated metals and trichloroethylene (TCE) contamination above the National Primary Drinking Water Requirement standards.

The results of the Metcalf & Eddy RCRA December 1994 Facility Investigation & Risk Assessment showed that no complete exposure scenarios existed for groundwater, surface water, or sediment for an occupational receptor.
In accordance with EPA letter dated September 15, 1994, long-term groundwater monitoring was continued in accordance with ODEQ directives.

STATUS

REGULATORY DRIVER: RCRA, C

RRSE: High

CONTAMINANTS OF CONCERN:
Metals

MEDIA OF CONCERN:
Groundwater

Phases	Start	End
RFA	199106	199206
CS	199106	199206
RFI/CMS	199212	199409
LTM	200501	203709

RC: 199409

In March 2000, ODEQ approved the groundwater assessment, which included terminating the long-term monitoring and abandoning the wells. The wells were abandoned in FY01. Documentation of well abandonment was submitted to and accepted by ODEQ in FY02 to complete closure requirements.

A five-year review was conducted in 2005 and it was determined that the remedy is still protective of human health and the environment although some deficiencies were noted.

CLEANUP STRATEGY

Deficiencies will be corrected by mowing the site semiannually and repairing areas of erosion. Because this site is a landfill, cap maintenance will be performed through FY10 and 5 year reviews will continue indefinitely.

MCAAP-032
BUILDING 209 PALLET DIPPING OPERATION

SITE DESCRIPTION

The site is located near the southwest corner of the Bomb Mine Area along Road 5 in the center section of the installation. The site is an open-sided, steel-girder structure set on a concrete block foundation. It is approximately 30 x 150 ft and was operational in the 1970s and 1980s. Wooden pallets were immersed into dipping vats, containing a pentachlorophenol (PCP) solution. Pallets were then allowed to drip dry. In the 1980s, PCP was replaced with copper-8-hydroxyquinolate.

Soil samples taken during the RFI revealed no PCP, but copper was detected above background and dioxins were detected in composite samples. The RFI recommended NFA based upon the low occupational exposure, and the EPA concurred. ODEQ has accepted a risk and cleanup level of 5 ppb (dioxins), which is a value greater than observed site concentrations.

STATUS

REGULATORY DRIVER: RCRA

RRSE: Medium

CONTAMINANTS OF CONCERN:
Dioxins

MEDIA OF CONCERN:
Soil

Phases	Start	End
RFA	199106	199206
CS	199212	199412
RFI/CMS	199901	200101
DES	200106	200408
CMI(C)	200309	200409
LTM	200501	201009

RC: 200409

The CMS for this site was accepted by ODEQ in February 2001 with the following conditions; (1) that the exposure assessment factors remain similar to those predicted in the human health risk assessment referenced in the Final Corrective Measure Study Report - Former Pallet Dipping Area - Bldg 209 - SWMU 32 and (2) that if the area usage should change, a reevaluation of the exposure assessment and risk assessment may be necessary. In order to comply with the RFI recommendation for NFA and the assumptions used in the risk assessment, some institutional controls are required to be maintained for the site. Controls include, but are not limited to the following: site access (signs, security personnel), site maintenance (gravel, surface runoff); use of appropriate personal protective equipment when handling effected soil; and minimization of activities that disturb soil conditions.

A request for closure was accepted by ODEQ as part of the RCRA Part B Permit renewal. This site is considered closed, but is subject to be reopened by public comments during the permit renewal period.

A five-year review was conducted and determined the remedy is still protective of human health and the environment.

CLEANUP STRATEGY

Sign-in/sign-out log book at site entrances and exits throughout FY07 and procedures will be evaluated in FY08 to ensure that closure requirements are being met. It is anticipated that 5 year reviews will not be required after FY10.

MCAAP-033
PALLET DIP OPERATION, BUILDING 471

SITE DESCRIPTION

The site is located due north of the medium caliber area in the northeast section of the installation. The site is a covered crane-way area approximately 15 x 30 ft and was used from 1972 to 1974. Wooden pallets were dipped into a PCP solution and allowed to drip dry on the surrounding concrete.

Soil samples during the RFI revealed no PCP or copper levels above background. However, the supplemental RFI detected dioxins in composite samples. The RFI recommended NFA based upon the low occupational exposure and the EPA concurred. Increased activity in the area by DAC has increased the exposure potential beyond that used in the risk analysis estimated during the RFI. The CMS for this site, which included a detailed risk assessment, recommended NFA.

ODEQ has accepted a risk and cleanup level of 5 ppb (dioxins), which is a value greater than observed site concentrations. The CMS for this site was accepted by ODEQ in February 2001 with the following conditions; (1) that the exposure assessment factors remain similar to those predicted in the human health risk assessment referenced in the Final Corrective Measure Study Report - Former Pallet Dipping Area - Bldg 471 - SWMU 33 and (2) that if the area usage should change, a reevaluation of the exposure assessment and risk assessment may be necessary. In order to comply with the RFI recommendation for NFA and the assumptions used in the risk assessment, some institutional controls are required to be maintained for the site. Controls include, but are not limited to the following: site access (signs, security personnel), site maintenance (gravel, surface runoff); use of appropriate personal protective equipment when handling effected soil; and minimization of activities that disturb soil conditions.

A request for closure was accepted by ODEQ as part of the RCRA Part B Permit renewal. This site is considered closed, but is subject to be reopened by public comments during the permit renewal period.

A five-year review was conducted and determined the remedy is still protective of human health and the environment.

STATUS

REGULATORY DRIVER: RCRA

RRSE: High

CONTAMINANTS OF CONCERN:
Dioxins

MEDIA OF CONCERN:
Soil

Phases	Start	End
RFA	199106	199206
CS	199212	199412
RFI/CMS	199901	200101
DES	200106	200209
CMI(C)	200208	200409
LTM	200501	201009

RC: 200409

CLEANUP STRATEGY

Have sign-in/ sign-out logbook at site entrances and exits throughout FY07 and evaluate procedures in FY08 to ensure that closure requirements are met. It is anticipated that 5 year reviews will not be required after FY10.

MCAAP-043
MINOL BUILDING (BLDG 644)

SITE DESCRIPTION

The site is located in the Bomb Mine Area in the center of the installation. The site was an abandoned one story, flat-topped, cement block building approximately 15 x 25 ft. In 1988, installation personnel sampled and discovered polychlorinated biphenyl (PCB) contamination of the structure (less than 15 ppm) and the soil (as high as 1600 mg/kg). On 25 January 1993, the installation notified EPA Region 6 that this was a new SWMU.

The RFI detected PCB 1242, PCB 1260, and TPH above acceptable EPA human health risk standards in the soils around the Minol building and PCB 1242/1260 in the structure at levels that exceed applicable health-based Applicable, Relevant and Appropriate Requirements (ARARs) for an occupational scenario. The EPA approved remediation of this site and issued temporary authorization to proceed with the removal of PCB-contaminated soils and structures to a level not to exceed 25 ppm.

STATUS

REGULATORY DRIVER: RCRA

RRSE: High

CONTAMINANTS OF CONCERN:
PCBs

MEDIA OF CONCERN:
Soil, Sediment

Phases	Start	End
RFA	198709	198809
CS	199212	199412
RFI/CMS	199301	199412
DES	199405	199412
IRA	199406	199811
CMI(C)	199812	200002
LTM	200501	201505

RC: 200002

In June 1994, a contract was awarded to remove the Minol Building, its associated piping and the surrounding soil, all of which were contaminated with PCBs. The fieldwork was completed in March 1995. It was determined that the contamination had spread downstream into a drainage swale. The swale area was remediated in February 1996. Final cleanup reports have been received and show the cleanup has achieved well below the 25 ppm specified. The Final Corrective Measures Completion Report for the Minol Building and Drainage Ditch South of Building 177 was submitted in July 1999 and accepted by the EPA on October 4, 2000.

PCB contaminated soil has been left in place at concentrations well below 25 ppm in accordance with 40 CFR 761.61. This complies with federal guidelines associated with self-implementing on-site cleanup and disposal efforts for low occupancy areas.

A five-year review was conducted and determined the remedy is still protective of human health and the environment.

CLEANUP STRATEGY

Inspect the site annually in conjunction with a general site review to confirm that site use and conditions remain in compliance with the remedy (no annual funding required). Five year reviews will continue.

IRP No Further Action Sites Summary

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA Date
MCAAP-001	Landfill, Southeast of Brown Lake	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199409
MCAAP-003	Active Landfill	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-004	Landfill, NW of Bldg 52SH405	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-005	Scrap Metal Disposal Area	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199409
MCAAP-006	Landfill NE of 20mm Area	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-007	Disposal Area North of DRMO	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-008	Wood Scrap Yard	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-009	Landfill, Road 4	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-010	Landfill South of 71-BT Area	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep	199206

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA Date
		1992 and modified in Dec 1998	
MCAAP-011	Landfill, Road Four and Road F	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-012	Group 41LC Lagoon & Landfill Area	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199409
MCAAP-013	Concrete Bomb Settling Ponds, Bldg 454	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-014	Concrete Bomb Settling Ponds, Bldg 455	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-015	Roundhouse Lagoons	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-016	Sewage Retention Lagoon	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-017	Bldg 186 Ponds and Lagoon	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-018	Deactivation Furnace/Lagoon	ODEQ approved Corrective Measures Completion Report – 27 March 2000	200209
MCAAP-019	Rocket Lake	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199409
MCAAP-020	B Plant West Lagoon	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep	199206

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA Date
		1992 and modified in Dec 1998	
MCAAP-021	B Plant East Lagoon	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-022	Medium Caliber Lagoon	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-023	Special Weapons Lagoons	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-024	C-Tree Lagoon	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-025	Active Open Burning Ground	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-026	Burn Area 2	ODEQ approved Corrective Measures Completion Report – 15 January 2002	200308
MCAAP-027	Old Demolition Area	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-028	New Demolition Area	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-029	Sedimentation Retention Basin	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-030	Pink Water Treatment System	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep	199206

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA Date
		1992 and modified in Dec 1998	
MCAAP-031	Pink Water Collection System	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-034	Deactivation Furnace	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-035	Suspect Acid Neutralization Pit	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-036	Burial Site	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-037	Waste Oil Storage Tank, RR House	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199001
MCAAP-038	DRMO Yard	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-039	Hazardous Waste Storage Area, Bldg 669	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-040	Haz Waste Storage Bunkers Bldg 41-LC 103	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-041	Sewage Treatment Plant	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA Date
MCAAP-042	Water Treatment Plant at Brown Lake	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-044	Brown Lake	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199206
MCAAP-045	Roundhouse Complex	This response complete recommendation was accepted by the EPA and is reflected by its absence in Section IV of the RCRA Part B Permit issued Sep 1992 and modified in Dec 1998	199909
MCAAP-047	PCB Contamination Detention Area	EPA approved 24 January 2005	200501

IRP Schedule

Initiation of IRP: 1991

Past Phase Completion Milestones

1988 Installation Assessment Completed

1992 USAEHA completed evaluation of Solid Waste Management Units

1994 Awarded contract for IRA at MCAAP-043
PA for MCAAP-045 completed
SI for MCAAP-045 awarded

1995 Completed work plan for CMS at MCAAP-018 and MCAAP-026 (March)
Awarded CMS for MCAAP-018 and MCAAP-026 (June)

1996 Received final report for MCAAP-045

1997 Awarded CMIP for MCAAP-018 (November)

1998 Awarded CMIP for MCAAP-026 (March)
Awarded contract for IRA at MCAAP-018 (December)
Completed workplan CMS for MCAAP-032 and MCAAP-033 (November)
Complete IRA for MCAAP-043

1999 Awarded contract for CMI(C) for MCAAP-026 (May)
Awarded contract for CMS for MCAAP-032 and MCAAP-033 (March)
Submitted Groundwater Assessment Closure Report to ODEQ for MCAAP-002 (March)
Received Final Report for MCAAP-018 (July)
Received Final Report for MCAAP-045 (September)

2000 Corrective Measures Completion Report accepted by ODEQ for MCAAP-018 (March)
Corrective Action Report Accepted by ODEQ for MCAAP-026 (September)
Completed Preliminary Assessment for Former Scrap Metal Baler Area (MCAAP-046) (August)
EPA approved Corrective Measures Completion Report for MCAAP-043 (October)
EPA accepted IRA as final RA for MCAAP-043 (October)

2001 Completed RFA on MCAAP-047 and MCAAP-048
ODEQ approved CMS for MCAAP-032 & MCAAP-033 (February)
Awarded CMS for MCAAP-046 and MCAAP-048
EPA awarded contract for CMI(C) for MCAAP-047
EPA awarded contract for IRA for MCAAP-048

IRP Schedule

2002 ODEQ Approved Final Work Plan CMS for MCAAP-048 (May 2002)
EPA approved CMIP Work Plan for MCAAP-047 (May 2002)
Fieldwork at 10 PST sites and 13 UST sites completed (January 2002)
CMI(C) completed at MCAAP-047

2003 Completed Phase II at 4 of 10 PST sites (MCAAP-048)
ODEQ approved CMS Phase 1 (Addendum # 2) for MCAAP-048 (July 2003)
ODEQ approved CMS (Addendum # 2) for MCAAP-046 (August 2003)
ODEQ approved CMS (Addendum #3) for MCAAP-046 (October 2003)
Completed Phase II at MCAAP-046

2004 Completed field investigation for 4 of the 10 PST supplemental activities
Awarded contract for RI Phase III of 4 PST sites
ODEQ approved CMS (Addendum #4) for MCAAP-046, November

2005 ODEQ approved CMS (Addendum #5) for MCAAP-046, January

Completed IRA at MCAAP-048
Submitted application for RCRA permit renewal
Completed closure of MCAAP-047

2006 Completed 5 year review for sites-MCAAP-002, 032, 033, 043

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates: 2007

Projected Construction Completion Date of IRP: 2009

Schedule for Next Five-Year Review: 2010

Estimated Completion Date of IRP (including LTM phase): Indefinite

McAlester AAP IRP Schedule

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
MCAAP-002	LTM									*203709*
MCAAP-032	LTM									
MCAAP-033	LTM									
MCAAP-043	LTM									*201505*
MCAAP-046	RFI/CMS									
	DES									
	CMI(C)									
	CMI(O)									*202609*
MCAAP-048	CMI(C)									
	CMI(O)									*202609*
	LTM									*202709*

Prior Years Funds

Total Funding up to FY04: $14,045,000

Year	Site Information	Expenditures	FY Total
FY05			
	RI/FS	$699K	
	LTM	$34K	**$733,000**

Total Funding thru FY05: $14,778,000

Current Year Requirements

Year	Site Information	Expenditures	FY Total
FY06	RFI/CMS-MCAAP-046	$281K	
	RFI/CMS-MCAAP-048	$268K	**$549,000**

Total Funding thru FY06: $15,327,000

Total Future Requirements: **$5,509,000**

Total IR Program Cost *(from inception to completion of the IRP):* **$20,836,000**

MCALESTER AAP

Military Munitions Response Program

MMRP Summary

Total AEDB-R MMRP Sites/AEDB-R sites with Response Complete: 5/0

AEDB-R Site Types:
3 Surface Disposal Area 1 Burn Area 1 Firing Range

Most Widespread Contaminants of Concern: OE

Media of Concern: Soil

Completed REM/IRA/RA: None

Total MMRP Funding

Prior years (up to FY05):	$ 326,000
Current Year (FY06):	$ 6,000
Future Requirements (FY07+):	$10,384,000
Total:	$10,716,000

Duration of MMRP
Year of MMRP Inception: 2003
Year of MMRP RIP/RC: 2014
Year of MMRP Completion Including LTM: 2047

MMRP Contamination Assessment

The Department of Defense established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program to identify and address sites known or suspected to contain unexploded ordnance (UXO), discarded military munitions or munitions constituents. The program concluded that response actions would be conducted under the process outlined in the National Contingency Plan as authorized by CERCLA.

The MMRP started with a baseline inventory that included a three-phase approach resulting in a Closed Transferring and Transferred (CTT) Range/Site Inventory Report. The initial phase involved a data call requesting general information about ranges located at MCAAP. This initial phase indicated one munitions response (MR) site.

Phase two involved a survey and inventory of all operation ranges. The intent of the inventory was to collect detailed, site-specific information, which delineated among other things, the operation range boundaries. The phase two inventory for MCAAP was conducted on 8 August 2001 and concluded that 39.31 acres of MCAAP is considered non-operation.

The third phase was a comprehensive inventory of non-operational ranges and other sites with known or suspected UXO, discarded military munitions, or munitions constituents. After the phase three inventory, five MR sites were identified at MCAAP.

Following CERCLA guidance, completion of the CTT Range/Site Inventory Report satisfies the preliminary assessment (PA) phase. A site inspection (SI) phase began in 2004 to collect information for refining the MMRP CTC estimates and determine if a remedial investigation will be required. A Historic Records Review, the initial step of the SI phase, was completed in March 2005 and recommended further characterization at all five sites. Fieldwork was conducted in FY05 to address data gaps that were identified during the records review and continue the site characterization. In FY06 the SI report were approved by ODEQ.

MMRP Cleanup Exit Strategy

It is anticipated that all five sites will require additional investigation and future remedial actions with additional LTM being required.

Previous Studies

2000

- U. S. Army Advance Range Survey for McAlester Army Ammunition Plant, McAlester AAP, Nov

2001

- U. S. Army Active/Inactive (A/I) Range Inventory for McAlester Army Ammunition Plant, USAEC, Dec

2003

- U. S. Army Closed, Transferring & Transferred Range/Site Inventory for McAlester Army Ammunition Plant, Engineering-Environmental Management, Inc., Apr

2004

- Stakeholder of the Military Munitions Response Program Historical Records Review, McAlester Army Ammunition Plant, McAlester, Oklahoma, Engineering-Environmental Management, Inc., Dec

MCALESTER AAP

Military Munitions Response Program

Site Descriptions

MCAAP-001-R-01
SCRAP METAL DISPOSAL AREA

SITE DESCRIPTION

This 10.27-acre site is located approximately one mile north of the Major Caliber area in the northeast portion of the installation. This site was a scrap metal disposal area from 1960 to 1970 for refuse including cans, buckets, drums, ZUNI rocket bodies, incinerator refuse and electrical refuse.

As part of the IRP, this site is identified as MCAAP-005 and no further action was approved by the Oklahoma Department of Environmental Quality due to the absence of human health risk and low ecological impact. No UXO responses have been conducted at this site. Currently, ZUNI rocket bodies are located all over the surface of this area and the site remains undeveloped.

The SI has been completed and ODEQ provided a letter on March 17, 2006 accepting the recommendations stated in the SI Report.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 – Serious Risk

CONTAMINANS OF CONCERN: OE

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200305
SI	200404	200511
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional investigation and waste removal is planned.

MCAAP-002-R-01
WOOD SCRAP YARD

SITE DESCRIPTION

This 4.97-acre site is located northeast of the intersection of Road 4 and F and was used from 1970 to 1980. An old burn area used to burn waste munitions was located at this site and is now covered by scrap wood and lumber being stored for reuse. A June 1977 report states that TNT, ammonia picrate, and smokeless powder were burned at this site.

As part of the IRP, this site is identified as MCAAP-008 and no further action was approved by the Oklahoma Department of Environmental Quality due to low exposure potential and no documented evidence of a release. No UXO responses have been conducted at this site. Currently, this site is used to store scrap wood and lumber for future reuse at the installation.

The SI has been completed and ODEQ provided a letter on March 17, 2006 accepting the recommendations stated in the SI Report.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 4 - Low

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200305
SI	200404	200511
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional investigation and soil removal is planned.

MCAAP-003-R-01
ABANDONED LANDFILL

SITE DESCRIPTION

This 3.15-acre site is located south of the Group 71-BT area and southwest of the 90 degree bend in Road F. This landfill was active between 1950 and 1970 and received unknown waste along with rocket bodies, metal boxes, wire and concrete rubble.

As part of the IRP, this site is identified as MCAAP-010 and no further action was approved by the Oklahoma Department of Environmental Quality. No UXO responses have been conducted at this site. Currently, ZUNI rocket bodies are located all over the surface of this area and the site remains undeveloped.

The SI has been completed and ODEQ provided a letter on March 17, 2006 accepting the recommendations stated in the SI Report.

CLEANUP STRATEGY

Additional investigation and soil removal is planned.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 - Serious

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil

Phasess	Start	End
PA	200212	200305
SI	200404	200511
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

MCAAP-004-R-01
GROUP 41 LC LAGOON & LANDFILL AREA

SITE DESCRIPTION

This 10.27-acre site is located south of the 41 LC Bunker Area in the north central part of the installation between two lagoons. This area was used from 1945 to 1960 as a dump area for miscellaneous items including significant amounts of mortar casings.

As part of the IRP, this site is identified as MCAAP-012 and was sampled for contaminants. Under the IRP, no further action was approved by the Oklahoma Department of Environmental Quality due to the absence of a human health risk and low ecological impact. No UXO responses have been conducted at this site. Currently, mortar casings are located all over the surface of this area and the site remains undeveloped.

The SI has been completed and ODEQ provided a letter on March 17, 2006 accepting the recommendations stated in the SI Report.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 - Serious

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200212	200305
SI	200404	200511
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

CLEANUP STRATEGY

Additional investigation and soil removal is planned.

MCAAP-005-R-02
MORTAR RANGE IMPACT AREA

SITE DESCRIPTION

This former range impact area is located on the north and south sides of Brown Lake and was used from 1962 through 1977. The US Marines used this area during firepower shows. Mortars of various sizes, and machine gun and tracer rounds were fired across Brown Lake into the impact area. The firing point was located on a peninsula on the north side of Brown Lake, while the impact area was located on the south side of the lake. No UXO responses or clean up has been conducted at this site. This 10.65-acre area is currently undeveloped.

The SI has been completed and ODEQ provided a letter on March 17, 2006 accepting the recommendations stated in the SI Report.

CLEANUP STRATEGY

Additional investigation and waste removal is planned.

STATUS

REGULATORY DRIVER: CERCLA

RAC Score: 2 - Serious

CONTAMINANTS OF CONCERN: OE

MEDIA OF CONCERN: Soil

Phases	Start	End
PA	200203	200305
SI	200510	200603
RI/FS	200810	201009
RD	201110	201204
RA(C)	201205	201309
LTM	201710	204709

RC: 201309

MMRP Schedule

Initiation of MMRP: 2002

Past Phase Completion Milestones

2005
Completion of Historic Record Review

Projected ROD/DD Approval Dates: 2010

Projected Construction Completion: 2014

Schedule for Five Year Reviews: unknown

Estimated Completion Date of MMRP including LTM: 2047

McAlester AAP MMRP Schedule

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
MCAAP-001-R-01	RI/FS									
	RD									
	RAC									
	LTM									*204709*
MCAAP-002-R-01	RI/FS									
	RD									
	RAC									
	LTM									*204709*
MCAAP-003-R-01	RI/FS									
	RD									
	RAC									
	LTM									*204709*
MCAAP-004-R-01	RI/FS									
	RD									
	RAC									
	LTM									*204709*
MCAAP-005-R-01	RIFS									
	RD									
	RAC									
	LTM									*204709*

Prior Years Funds

Total Funding up to FY04: $310,000

Year	Site Information	Expenditures	FY Total
FY05	Installation-wide SI	$16,000	**$16,000**

Total Funding up to FY05: $326,000

Current Year Requirements

Year	Site Information	Expenditures	FY Total
FY06	SI	$6,000	**$6,000**

Total Funding up to FY06: $332,000

Total Future Requirements: **$10,384,000**

Total MMR Program Cost *(from inception to completion of the MMRP):* **$10,716,000**

Community Involvement

MCAAP does not have a RAB or a Technical Review Committee. The plant has surveyed the surrounding community on several occasions and has determined there is currently no community interest in forming a RAB.

The latest public canvassing was accomplished in February 2005 through a mailing to potentially interested community residents, which included a public meeting. One interested party attended the meeting. There was not sufficient interest to develop the RAB.

McAlester's Community Relations Plan was updated in 2005.